U.S. DEPT. OF AGRICULTURE.

Brief instructions in regard to sowing seeds, and raising young plants, of forest trees.

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SOWING SEED.

As a general rule all seeds should be sown as soon as they are ripe. They will vegetate sooner if sown immediately after being gathered from the plant than they will at any other time. Exposure to the air hardens their outside coverings, which tends to prevent germination; so that whether a seed will germinate in one week, one month, one, two, or three years after sowing, greatly depends upon the amount of drying and exposure to air it is subjected to before it is sown.

But it is not always practicable or convenient to sow seeds immediately after they are gathered; therefore, the alternative is to preserve them in the best manner to retain their vitality, and facilitate speedy germination when sown.

Among those which do best when sown in the fall, or shortly after ripening, are the seeds of the Peach, Cherry, Chestnut, Hazelnut, Walnut, Hickory, Oak, Horsechestnut, Beech, Linden, Kentucky Coffee Tree, Honey Locust, Persimmon, Judas Tree, Hackberry, Yellow Locust, Osage Orange, and Magnolia. If kept over winter to be sown in spring, they should be mixed with sand, or dry earth, and kept in a cool place, such as an open shed or ventilated cellar.

Acorns and nuts may also be preserved by spreading them thickly on the surface of the ground in the open air, and covering them with three or four inches of sand.

There are some seeds that ripen early and will not keep well; of these the Silver Maple, Red Maple, Elm, and Poplar may be mentioned as examples.

Small seeds, and those that are light and chaffy, such as seeds of the Alder, Birch, Sycamore, Catalpa, Paulownia, Tulip Tree, and Mulberry, as also some of the later ripening winged seeds, as the Sugar Maple, Negundo, and the species of Ash, should be gathered when ripe and spread thinly in an airy situation to partially dry, then stored in coarse bags in a cool place until wanted for sowing in spring. Larch, Pine, and seeds of coniferous plants generally, should be kept in a similar manner during winter.

To succeed in raising healthy, well-rooted plants, it is essentially necessary that the seed should be sown in deeply worked, light, loamy soil. It should not only be deep, but also as rich and fertile as it can be made. In general there is altogether too little account made of this greatest help to success, and numerous failures in first attempts at special cultures, such as that of raising trees from seeds, are clearly traced to the use of poor and shallow soils.

The most convenient method for after-culture is to sow in drills. The distance between the drills will be guided by circumstances. If hand culture only is to be employed, 18 inches apart will be sufficient. The depth will also depend upon the size of the seed. Acorns and the larger kinds of nuts should be covered with about 2 inches of soil, and if this immediate covering is composed of light mold and sand somewhat firmly pressed over the seeds, moisture will be more uniformly secured, and the young shoots will meet no impediment in their growth, as often occurs when the soil is clayey and becomes hard and compact on the surface. Light and small seeds are often sown on the surface of the ground, which is afterward raked evenly and smoothly, so as to slightly cover the seeds, and if dry, rolled with a light wooden roller, pressed by close tramping over the rows with the feet in order to crumble down the small clods and close up the surface with a view of preventing the soil from rapidly becoming dry. If these small seeds are sown in drills, a very light covering will suffice.

The ordinary care given to cultivated crops, such as weeding, hoeing, or merely stirring the surface, will be necessary when the young plants appear, so as to encourage their growth.

Very fine small seed may be planted in boxes and covered with glass, or with a piece of cotton cloth, thus preventing rapid evaporation, and giving light to the plant until its roots shall have penetrated the soil far enough to enable it to endure severe drying of the surface.

TRANSPLANTING.

Small trees are easier transplanted than large ones. The size rather than the age of the plant will usually govern the time of removal from the seed rows. Silver Maple seed sown in June will produce trees from 2 to 3 feet high the first summer, so that they are fit to transplant to their permanent locations in six months from the sowing of the seed. On the other hand, a Horse-chestnut would probably require three years to attain a similar height. If the plants have made a growth of about 18 inches, they may be transplanted in nursery rows, where they remain for a year or two, after which they may be removed to their final positions, the length of time allowed in the nursery depending somewhat upon the purposes for which they are to be employed.

If the intention is to plant thickets, or close belts for the purpose of sheltering and protecting exposed fields or sites, the plants may be removed at once from the seed drills to their permanent locations, without going through the preliminary of special nursery culture, as their treatment in plantations or belts, for several years, is of the same general character.

The best practical method of securing belts or plantations of forest trees, is to prepare the soil by plowing and harrowing as if for a crop of wheat, and set out the plants in rows far enough apart to admit of thorough cultivation, which is quite as essential in growing young trees as it is in growing corn.

The exact distance apart between the plants in the rows, as well as that between the rows, will vary according to circumstances of position and pur-

pose, and the kind of trees planted. Thick planting is a necessity with some trees, when available timber is expected. Such trees as the Catalpa and the Osage Orange, which yield valuable timber, but are naturally of low, branching growth, can be drawn up into clean, tall stems by thick planting and judicious thinning as they progress in size. These and similar practices, having for their object the tendency to control the growth of trees in order to produce desired results, are what is understood by the terms, the science and practice of Forestry.

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